

Practice: 490 - Tree/Shrub Site Preparation**Scenario: #1 - Site Prep, Heavy Mechanical, Two or More Mechanical Treatments****Scenario Description:**

This multiple mechanical treatment will be used on sites with small trees and scattered brush left after a timber harvest or a site that lost all of the merchantable trees due to a fire, insects, disease or other catastrophic event. This area has a high volume of woody debris, brush and small trees left on the site requiring a multiple pass mechanical treatment. Any combination of single mechanical treatments but not limited to: Shear/Rip/Bed, Shear/Rake/Pile, Rip/Bed, Shear/Rip, 3-n-1 Plow, etc.

Before Situation:

A 40 acre site is dominated by undesirable vegetation including herbaceous plants and significant amounts of woody vegetation (trees and brush) occupying the site. There is also a significant component of woody debris onsite. Noxious and invasive species may also be present on the site. Sheet and rill erosion is occurring in areas where the soil was severely disturbed exposing bare soil. If left untreated, erosion issues will result in poor survival or reduced growth of trees/shrubs to be established on the site. The resource concerns include: soil - erosion concentrated flow; soil erosion - sheet and rill; water quality - sediments and turbidity; plant condition - inadequate health and vigor; plant suitability - adaptability to the site and the Intended Use; wildlife - inadequate food, cover, water.

After Situation:

Undesirable vegetation has been removed using mechanical methods reducing competition for target trees and/or shrubs establishment. Woody debris has been removed to facilitate tree/shrub planting operations. Site conditions are favorable for successful establishment of trees and/or shrubs.

Scenario Feature Measure: Area of Treatment**Scenario Unit:** Acre**Scenario Typical Size:** 40**Scenario Cost:** \$14,377.38**Scenario Cost/Unit:** \$359.43**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Heavy mechanical site prep, shearing, V-blade, K-G blading	1314	Mechanical operations that shear trees and vegetation. Requires heavy equipment such as dozers, Includes equipment, power unit and labor costs.	Acre	\$175.49	28	\$4,913.72
Heavy mechanical site prep, drum chopping	1316	Mechanical operations that pushing trees and vegetation and crushing them with a water filled roller chopper. Requires heavy equipment such as dozers. Includes equipment, power unit and labor costs.	Acre	\$127.39	28	\$3,566.92
Heavy mechanical site prep, raking	1317	Mechanical operations that pushing and raking trees and vegetation. Requires heavy equipment such as dozers. Includes equipment, power unit and labor costs.	Acre	\$151.85	28	\$4,251.80
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$37.95	10	\$379.50
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$18.11	24	\$434.64
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	\$415.40	2	\$830.80

Practice: 490 - Tree/Shrub Site Preparation**Scenario: #2 - Site Prep, Mechanical Light****Scenario Description:**

This practice involves the use of light/moderate machinery such as a disk or bush-hog to clear above ground vegetation in order to improve site conditions for establishing trees and/or shrubs.

Before Situation:

A 40 acre site may include abandoned land, pasture, rangeland, cropland or forestland that has been harvested. Undesirable vegetation is present on the site including herbaceous plants and sparse brushy competition. Noxious and invasive species may also be present on the site. If left uncontrolled, undesirable vegetation will inhibit successful establishment of target species of trees and/or shrubs. This following resource concerns: soil quality degradation - soil erosion - sheet and rill, and degraded plant condition - undesirable plant productivity and health and inadequate structure and composition.

After Situation:

Undesirable vegetation has been removed using a bush-hog to knock down standing vegetation, thus enhancing the conditions for planting and survival of trees and/or shrubs. Site conditions are favorable for successful establishment of trees and/or shrubs.

Scenario Feature Measure: Area of Treatment

Scenario Unit: Acre

Scenario Typical Size: 40

Scenario Cost: \$1,709.72

Scenario Cost/Unit: \$42.74

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hour	\$43.22	16	\$691.52
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$31.63	10	\$316.30
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$37.95	10	\$379.50
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$20.15	16	\$322.40

Practice: 490 - Tree/Shrub Site Preparation**Scenario: #3 - Site Prep, Chemical****Scenario Description:**

Chemical site preparation treatment will be used on sites with small trees and scattered brush left after a timber harvest or a site that lost all of the merchantable trees due to a fire, insects, disease or other catastrophic event. The recommendation will need to be site specific. Chemicals are selected based on the soils and current vegetation that needs to be controlled. The method of application will depend upon availability of ground or aerial contractors.

Before Situation:

A 40 acre site is dominated by undesirable vegetation including herbaceous plants and woody vegetation. Noxious and invasive species may also be present on the site. If left uncontrolled, undesirable vegetation will inhibit successful establishment of target species of trees and/or shrubs. The resource concerns include: air quality - chemical drift; air condition - air temp and movement; soil condition - contaminants excessive chemicals; soil - erosion ephemeral gully; water quality - sediments and turbidity; plant condition - inadequate health and vigor; plant suitability - adaptability to the site and the intended use; wildlife- inadequate food, cover, water.

After Situation:

Undesirable vegetation has been treated using appropriate herbicides, reducing competition for target trees and/or shrub planting. Site conditions are favorable for successful establishment of trees and/or shrubs.

Scenario Feature Measure: Area of Treatment

Scenario Unit: Acre

Scenario Typical Size: 40

Scenario Cost: \$4,744.69

Scenario Cost/Unit: \$118.62

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$4.94	40	\$197.60
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$31.63	24	\$759.12
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$37.95	24	\$910.80
Materials						
Herbicide, Sulfometuron methyl & Hexazinone	1282	Broad spectrum herbicide for residual weed control for christmas trees and other trees. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$23.67	40	\$946.80
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$1.32	40	\$52.80
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$41.50	40	\$1,660.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$217.57	1	\$217.57

Practice: 490 - Tree/Shrub Site Preparation**Scenario: #4 - Site Prep, WindBreak Preparation****Scenario Description:**

This practice involves the use of various chemical/tillage methods to allow for the planting of a windbreak. Site preparation includes chemically killing vegetation prior to mechanical site preparation which will include appropriate methods to allow for planting of the site, which may include one or all of the following, ripping, disking, and harrowing. This practice may be applied on all lands needing treatment to facilitate establishment of trees and/or shrubs to facilitate establishment of a windbreak.

Before Situation:

Typical site includes a 40 acre wheat field experiencing wind erosion above "T" due to excessive unsheltered distances. Undesirable vegetation, including herbaceous plants, is present on the site. Noxious and invasive species may also be present on the site. If left uncontrolled, undesirable vegetation will inhibit successful establishment of target species of trees and/or shrubs. Resource concerns: soil erosion--wind erosion.

After Situation:

Undesirable vegetation has been treated using appropriate herbicides and tillage, reducing competition for target trees and/or shrubs. Site conditions are favorable for successful establishment of trees and/or shrubs. The typical size is 1.5 acres.

Scenario Feature Measure: area of treatment

Scenario Unit: Acre

Scenario Typical Size: 2

Scenario Cost: \$128.90

Scenario Cost/Unit: \$64.45

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	\$8.97	1.5	\$13.46
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$4.94	1.5	\$7.41
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$18.11	4	\$72.44
Materials						
Herbicide, 2,4-D	330	Broadleaf herbicide labeled for cropland and pasture. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$6.78	1.5	\$10.17
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$1.32	1.5	\$1.98
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$15.63	1.5	\$23.45

Practice: 490 - Tree/Shrub Site Preparation**Scenario: #5 - Site Prep, Ripping****Scenario Description:**

This scenario is comprised of a ripping operation to prepare an area to plant tree seedlings. Ripping occurs along the contour to slow down water runoff and traps sediment. The tree seedlings have a better rooting zone allowing them to develop deeper and better roots improving growth and survival.

Before Situation:

This practice is conducted typically on small tracts approximately 40 acres in size although it can be done on larger or smaller acreages. The area has been harvested and the trees have been removed and it is desirable to re-plant the site with tree seedlings. An alternative is an old field, pasture or agriculture field that is targeted for tree planting. These sites often have hard pans or shallow rooting zones. The resource concerns include: soil: sheet and rill erosion; soil - compaction; water quality - sediments and turbidity; plant condition - inadequate health and vigor.

After Situation:

After the practice is completed the rips will be clearly evident by the rips in the ground. The site is ready for tree and/or shrub establishment.

Scenario Feature Measure: acres

Scenario Unit: Acre

Scenario Typical Size: 40

Scenario Cost: \$4,167.71

Scenario Cost/Unit: \$104.19

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hour	\$105.78	29	\$3,067.62
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$23.61	29	\$684.69
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	\$415.40	1	\$415.40

Practice: 490 - Tree/Shrub Site Preparation**Scenario: #6 - Site Prep, Single mechanical treatment****Scenario Description:**

A single mechanical treatment will be used on sites with small trees or scattered brush left after a timber harvest or a site that requires ripping to prepare the rooting zone for tree establishment. Includes one of the following, but not limited to: One Pass Shear, Shear, Rake, Pile, Bedding, Ripping, Drum Chopping, etc.

Before Situation:

This practice is conducted typically on small tracts approximately 40 acres in size although it can be done on larger or smaller acreages. The site consists of small trees and scattered brush left after a timber harvest or a site that lost all of the merchantable trees due to a fire, insects, disease or other catastrophic event. The area will look very brushy and be difficult to walk through. The resource concerns include: soil - sheet and rill erosion; water quality - sediments and turbidity; plant condition - inadequate health and vigor; plant suitability - adaptability to the site and the intended use; wildlife- inadequate food, cover, water.

After Situation:

After the practice is completed the brush and small trees will be severed, pushed down or crushed to the ground making it easier to walk through which will be critical during tree establishment.

Scenario Feature Measure: acres

Scenario Unit: Acre

Scenario Typical Size: 40

Scenario Cost: \$9,864.04

Scenario Cost/Unit: \$246.60

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Heavy mechanical site prep, shearing, V-blade, K-G blading	1314	Mechanical operations that shear trees and vegetation. Requires heavy equipment such as dozers, Includes equipment, power unit and labor costs.	Acre	\$175.49	40	\$7,019.60
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$31.63	48	\$1,518.24
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$37.95	24	\$910.80
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	\$415.40	1	\$415.40

Practice: 490 - Tree/Shrub Site Preparation**Scenario: #7 - Site Prep, Ripping and Chemical Application****Scenario Description:**

This scenario is comprised of a ripping operation to prepare an area to plant tree seedlings. Ripping is completed with a tractor or dozer followed by a herbicide treatment over the ripped area. Ripping occurs along the contour to slow down water runoff and traps sediment. The tree seedlings have a better rooting zone so they develop deeper and better roots improving growth and survival. The specific herbicide and rate depends upon the type of vegetation present on the site. The herbicide can be applied as a band over the ripped area or broadcast over the entire area.

Before Situation:

The typical area is about 40 acres, however, larger and smaller acreages can be treated using this practice. The area has been harvested and the trees have been removed and it is desirable to re-plant the site with tree seedlings. An alternative is an old field, pasture or agriculture field that is targeted for tree planting. These sites often have hard pans or shallow rooting zones. The resource concerns include: soil: sheet and rill erosion, soil - ephemeral gully; soil - compaction; water quality - sediments and turbidity; plant condition - inadequate health and vigor.

After Situation:

Once the practice is completed the rip will be evident and the vegetation along either side of the rip should be controlled with the herbicide application. The area is ready for tree and/or shrub establishment.

Scenario Feature Measure: acres

Scenario Unit: Acre

Scenario Typical Size: 40

Scenario Cost: \$7,750.08

Scenario Cost/Unit: \$193.75

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$31.63	16	\$506.08
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$4.94	40	\$197.60
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	\$26.07	40	\$1,042.80
Ripper or subsoiler, 16 to 36 inch depth	1235	Deep ripper or subsoiler, (16-36 inches depth) includes tillage implement, power unit and labor.	Acre	\$16.05	40	\$642.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$18.11	40	\$724.40
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$37.95	16	\$607.20
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$15.63	40	\$625.20
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$41.50	40	\$1,660.00
Herbicide, Triclopyr	338	Refer to WIN-PST for product names and active ingredients. Materials and shipping	Acre	\$42.30	40	\$1,692.00
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$1.32	40	\$52.80

Practice: 490 - Tree/Shrub Site Preparation**Scenario: #8 - Site Prep, Mechanical and Chemical****Scenario Description:**

Any combination of single mechanical treatments and herbicide but not limited to: Shear/Rip/Bed, Shear/Rake/Pile, Rip/Bed, Shear/Rip, 3-n-1 Plow, etc. plus herbicide application. The practice is to mechanically reduce the woody vegetation getting it to the ground followed by a herbicide treatment. The herbicide(s) and method of application should be determined by the site and type of vegetation targeted for control along with the application rate.

Before Situation:

This practice is conducted on typically 40 acres parcels of land, however, larger and smaller acreages can be treated. The area has the merchantable trees removed and the site has a lot of less desirable woody vegetation and poor quality trees growing on the site. The resource concerns include: water quality - sediments and turbidity; water quality - pesticides; air quality - chemical drift; plant suitability - adaptability to the site and intended use; plant condition - productivity and vigor.

After Situation:

Once the practice is completed the woody vegetation will be down and the herbicide application will take out many of the undesirable woody plants. The site will look fairly clean and it is ready for tree and/or shrub establishment.

Scenario Feature Measure: acres

Scenario Unit: Acre

Scenario Typical Size: 40

Scenario Cost: \$14,526.70

Scenario Cost/Unit: \$363.17

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Chemical, aerial application, helicopter	1991	Chemical application performed by helicopter on forest only. Includes equipment, mobilization, and labor.	Acre	\$30.83	20	\$616.60
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$31.63	10	\$316.30
Chemical, ground application, wildland	1313	Chemical application performed by ground equipment. Includes forestry application methods that include heavy equipment such as skidders. Includes material, equipment, power unit and labor costs.	Acre	\$93.30	20	\$1,866.00
Heavy mechanical site prep, shearing, V-blade, K-G blading	1314	Mechanical operations that shear trees and vegetation. Requires heavy equipment such as dozers, Includes equipment, power unit and labor costs.	Acre	\$175.49	20	\$3,509.80
Heavy mechanical site prep, drum chopping	1316	Mechanical operations that pushing trees and vegetation and crushing them with a water filled roller chopper. Requires heavy equipment such as dozers. Includes equipment, power unit and labor costs.	Acre	\$127.39	20	\$2,547.80
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	\$26.07	40	\$1,042.80
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$37.95	8	\$303.60
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$18.11	40	\$724.40
Materials						
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$1.32	40	\$52.80
Herbicide, Triclopyr	338	Refer to WIN-PST for product names and active ingredients. Materials and shipping	Acre	\$42.30	20	\$846.00

Materials

Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$41.50	40	\$1,660.00
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$15.63	40	\$625.20

Mobilization

Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	\$415.40	1	\$415.40
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